

# **NASA Global Change Master Directory**

## **EDG Operations/Development Workshop**

**June 5, 2002**

**NASA/GSFC Greenbelt, MD**

**Gene Major ([major@gcmd.nasa.gov](mailto:major@gcmd.nasa.gov))**

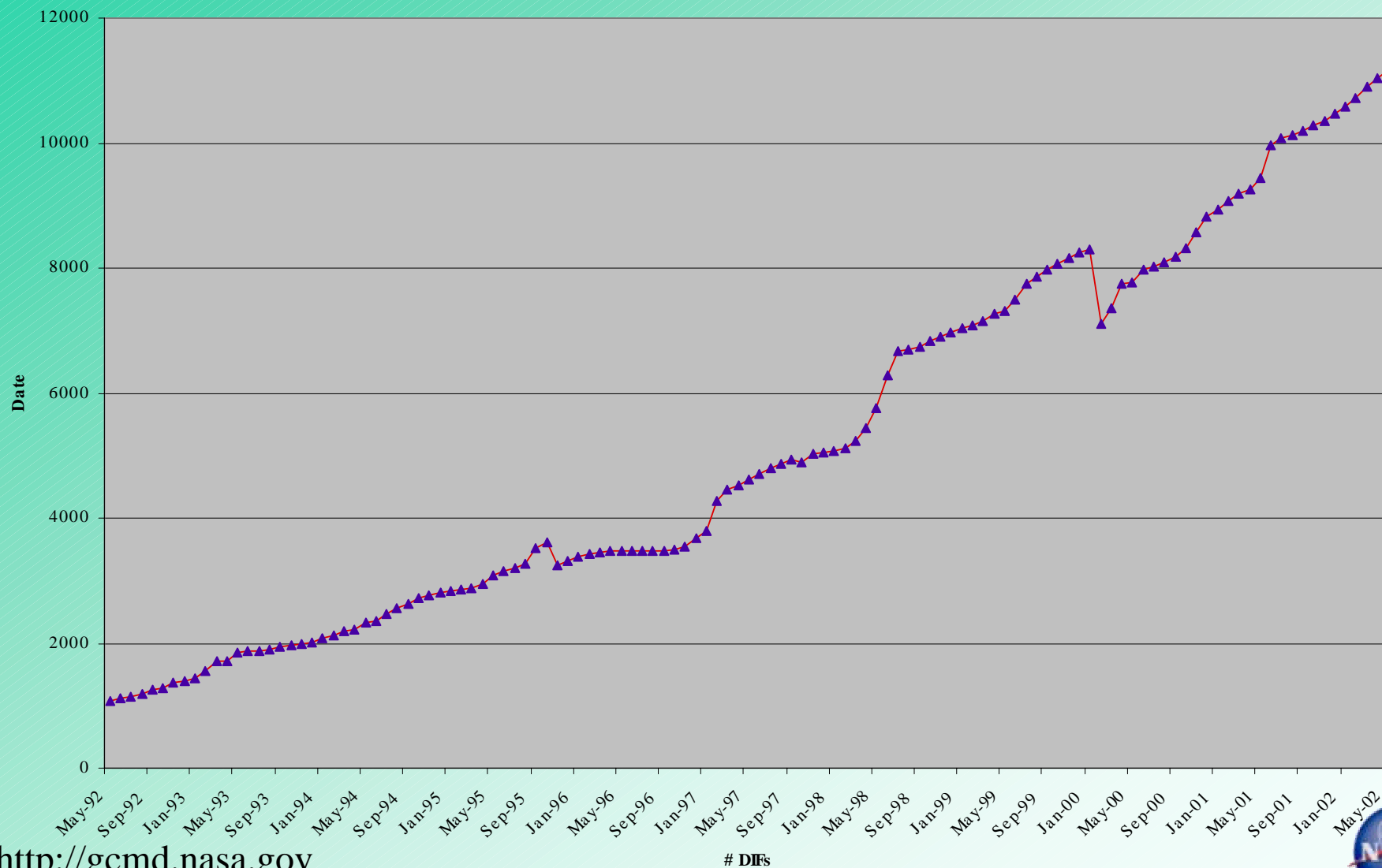
**Heather Weir ([hweir@gcmd.nasa.gov](mailto:hweir@gcmd.nasa.gov))**

<http://gcmd.nasa.gov>



# Ten Years of DIFs

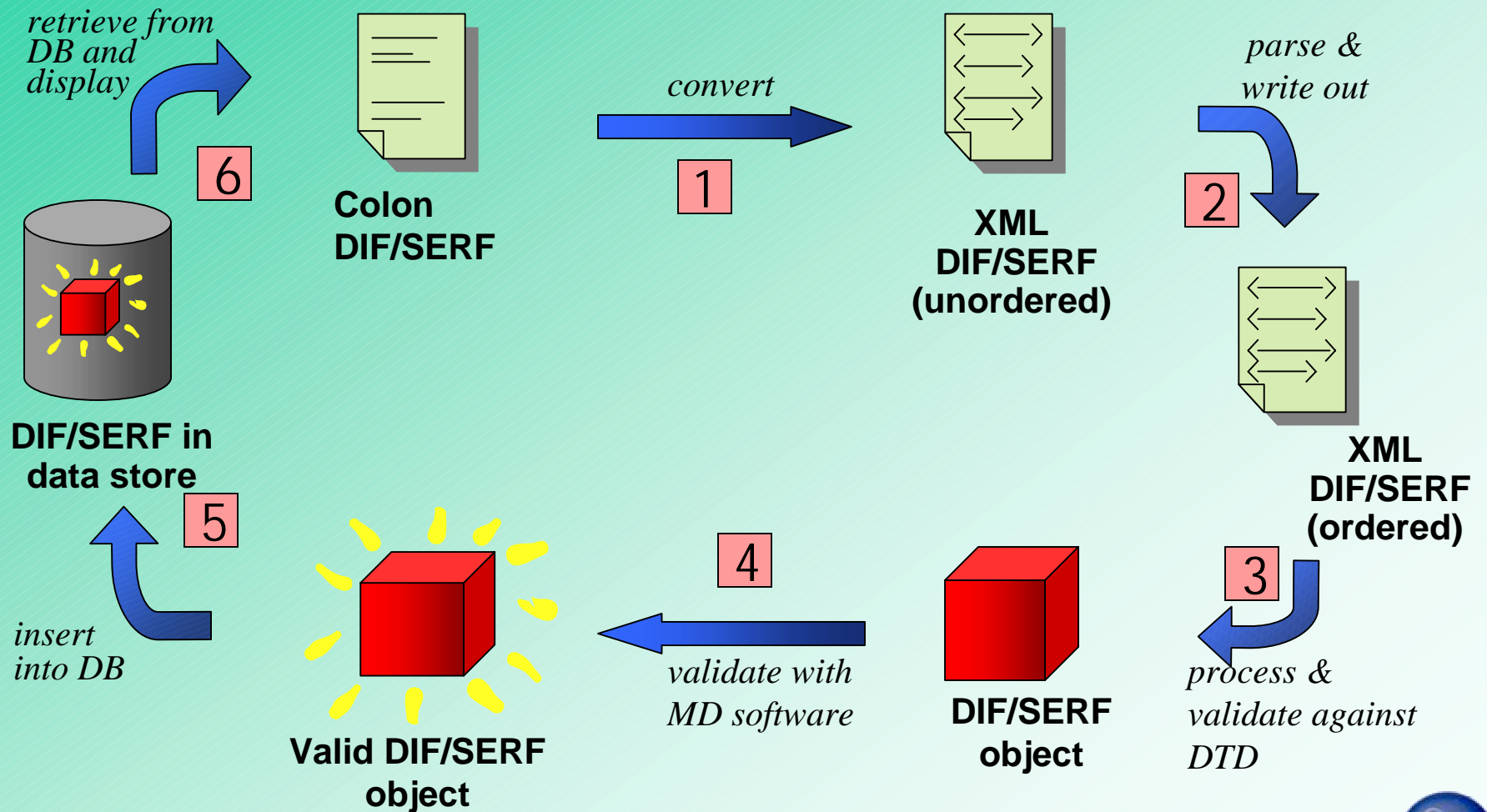
## May 1992-March 2002



<http://gcmd.nasa.gov>



# Life Cycle of the DIF/SERF



# GCMD SERVICES

Defined services keywords for categorizing services

**SERVICE\_TOPIC > SERVICE\_TERM > SERVICE\_VARIABLE**

**SERVICE\_TOPIC** is a high level Earth science service descriptor that defines the scope of the content

**SERVICE\_TERM** is a more detailed Earth science service descriptor. There can be several SERVICE\_TERMs per SERVICE\_TOPIC.

**SERVICE\_VARIABLE** is the most detailed descriptor in the hierarchy

**Example:**

**Education/Outreach > Curriculum Support > Classroom Activities**



# Earth Science Services Parameters

- Topics
  - Data Analysis and Visualization
  - Data Handling
  - Education/Outreach
  - Environmental Advisories
  - Hazards Management
  - Information and Reference Services
  - Metadata Handling
  - Models

**Keywords added August 2001**

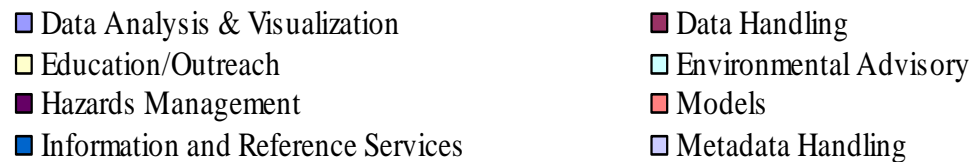
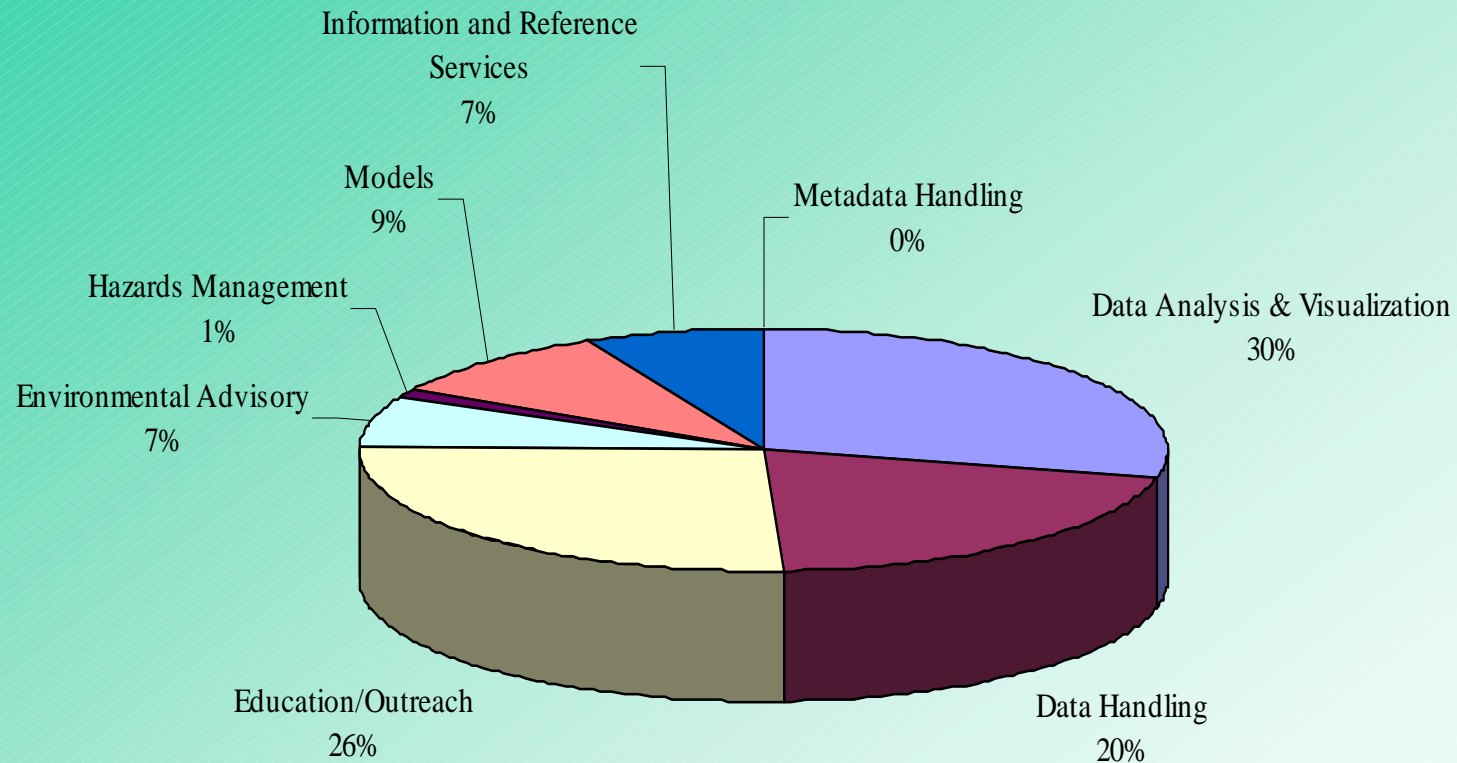
**Keyword added January 2002**

**Keyword added March 2002**

<http://gcmd.nasa.gov>



# Distribution of SERFs by Topic



# Federation of Earth Science Information Partners (ESIP)

- **GCMD population of ESIP products and services**

ESIP Type 1:    1987 DIFs                      43 SERFs

ESIP Type 2:    719 DIFs                      8 SERFs

ESIP Type 3:    17 DIFs                      6 SERFs

**Total:                      2723 DIFs                      57 SERFs**

**%of GCMD                      24%                      18%**  
**holdings**





# DIF/SERF Population by DAAC

| DAAC            | DIFS | SERFS (4/30/02) |
|-----------------|------|-----------------|
| ASF DAAC        | 31   | 1               |
| EDC (LP DAAC)   | 82   | 1               |
| GSFC (GES DAAC) | 314  | 4               |
| JPL -PODAAC     | 71   | 12              |
| LARC DAAC       | 294  | 5               |
| NSIDC DAAC      | 76   | 6               |
| ORNL DAAC       | 594  | 0               |
| SEDAC           | 65   | 6               |
| MSFC/GHRC       | 96   | 7               |





# DAAC Alliance Metrics

- At request of V. Griffin, GCMD became responsible for tracking publicly-available DAAC products.
- GCMD works closely with SPSO to track products.
- At end of FY01, there were **1,553** DAAC DIFs representing **1,656** products.
- As of 4/30/02, there were **1,623** DAAC DIFs representing **1,726** products (accounting for deletions and replacement DIFs).



# Keyword Changes

*Guiding Principles: Follow the Rules!*

- Earth science parameters are a 4-tier **controlled vocabulary** for indexing and retrieving metadata.
- Parameter hierarchy includes a 5th level uncontrolled “*detailed variable*”.
  - **CATEGORY > TOPIC > TERM > VARIABLE > detailed variable**
- **Example:**  
**EARTH SCIENCE > Solid Earth > Geochemistry > Chemical Weathering**
- **New keyword requests are subject to the following:**
  - **Examination of the rules**
  - **Literature research to ascertain usage**
  - **Examination of DIFs that could potentially benefit from new keyword addition**
  - **Consultation with experts**



# Keyword Process

## ECS and EDG Notification Policy

- ECS and EDG are notified of GCMD-approved science keyword changes prior to implementation
- Process gives ECS and EDG time to notify science and data teams as to potential software changes. *New* keywords added to the GCMD are usually not a problem (when approved). *Modification* of existing keywords is more problematic.



# Keyword Process

- Keywords requiring **modification** can usually be modified through database operations so that
  - all DIFs affected are modified at the same time.
- **New** keywords (when approved) are simply added to the database and to the list of controlled keywords available in tools and interfaces.
  - Usually **manual** process to ensure existing DIFs are indexed with the new keyword.



# Summary of Science Keyword Changes

- Added 54 new **Variables** and 4 new **Terms**
- Modified 39 **Variable** and 2 **Terms**
- **Currently: 1199 Variables in GCMD**
- Modified Marine Geophysics and Bathymetry Terms and Variables
  - Many keywords were not being used or could be re-classified under better Terms
- Modified Terrestrial Ecosystem Variables from singular to plural (e.g., forest to forests)
- Modified Marine Sediments Variables
  - Suggested by C. Moore at NOAA/NGDC/MGG
- Change Term Solar-Terrestrial Interactions to Sun-Earth Interactions
  - Sun-Earth was more recognizable Term
  - More compatible with home page redesign - took up less “real estate” in keyword hierarchy.





# Keywords Added

- Added Marine Biology, Marine Geochemistry, Marine Tectonics, Marine Volcanism , and Sea Surface Topography Terms and Variables to Oceans
- Added Land Use/Land Cover Term and Variables to Human Dimensions
- Added Geomorphology Term and Variables to Solid Earth
- Added Natural Hazards Term and Variables to Human Dimensions
- Added Aquatic Habitat and Demersal Habitat Variables to Biosphere
- Added Forest Science/Conservation Variables to Biosphere (Canada)
- Added Snow Chemistry (NSIDC)



# Who Suggested Keyword Changes in 2001?

- GCMD Staff
- EOSDIS DAAC/DAAC Alliance data providers
  - MSFC/GHRC
  - NSIDC DAAC
  - GSFC DAAC
  - SEDAC
  - ORNL DAAC
- ECS Science Office
- NOAA/NGDC (marine geophysics)
- Canada/CCRS (forest science)
- IODE (marine biology, oceans)





# Community Usage of GCMD Keywords

- **CEOS Interoperability Protocol (CIP)**
  - uses Category > Topic > Term
- **EOSDIS Data Gateway (EDG)**
  - uses Topic > Term > Variable
- **EOSDIS Core System (ECS)**
  - uses all 5 levels , including detailed variable
- **Other Communities using GCMD Keywords**
  - FGDC (although not required); many agencies using FGDC metadata use GCMD keywords as “theme thesaurus”
  - Canada and GeoConnections
  - Mercury
  - U. Cal. Natural Reserve System
  - NOAA
  - Semantic web
  - NASA’s Visible Earth (part of Earth Observatory)
  - DODS

<http://gcmd.nasa.gov>



# Metadata Authoring Tools

- **DIFBuilder**

- Web-based, user-friendly tools for describing *Earth science data sets*
- Requires only 6 fields
- <http://gcmd.nasa.gov/cgi-bin/difbuilder/difbuilder>

- **ModDIFBuilder**

- Same as DIFBuilder, but allows for updating directly from retrieved DIF
- <http://gcmd.nasa.gov/cgi-bin/moddifbuilder/moddifbuilder>



# Metadata Authoring Tools

- **SERFBuilder**

- Web-based, user friendly tool for describing *Earth science*
- *Services*
- Requires only 7 fields
- <http://gcmd.nasa.gov/cgi-bin/serfbuilder/serfbuilder>



# Need Help? Got Questions?

- Data Set Descriptions (DIFs):
  - Gene Major 301-867-2088
  - [major@gcmd.nasa.gov](mailto:major@gcmd.nasa.gov)
- Service Descriptions (SERFs):
  - Heather Weir 301-867-2083
  - [hweir@gcmd.nasa.gov](mailto:hweir@gcmd.nasa.gov)

